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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,271	08/18/2003	Hitoshi Yamada	030933	2420

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EXAMINER

PADGETT, MARIANNE L

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 07/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/642,271	YAMADA ET AL.	
	Examiner	Art Unit	
	Marianne L. Padgett	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/3/2005 & 8/18/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/3/05</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. Claim 4 is objected to because of the following informalities: the phrasing and claim for that reads "the Topaz the size up the opening in the range of..." is not idiomatic English phrasing in could be stated more clearly, such as -- an opening of the tube has a size range of ... --, which would also use more appropriate articles for introducing new limitations. Appropriate correction is required.

2. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 or 5, the claimed process is unclear, because "when a metal oxide film is formed..." or when a second-tier eat...", are not positively stated limitations, i.e. they are conditionally stated, so do not necessarily occur. Hence, it is uncertain whether or not these conditional steps are required for performing the claimed process, which cause serious uncertainty in the claims because they encompass the majority of the limitations.

In claim 3, while the alternative UV limitation is further defined, it has not been positively selected, hence effectively claim 3's limitation is not positively claimed, making whether or not it is intended to be required uncertain.

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,932,664 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because while the patents claims are more detailed, they encompass the present claims, with the particular metal oxide species claimed reading on the generic metal oxide. Specifically note, the "locally solidifying" procedure is done to the solution as it forms the coating film, and the "burning the coating film to form an electron in mission film on the entire inner wall of the tube" is claimed as being done to the entire film at once, implying that this thermal treatment is after they localized one, which may be done by drying or fixing by localized used of radiation, that includes UV radiation.

While use of a mask or particular tube dimensions are not claimed in the patent, it is conventional in the radiation art to affect localized exposure of a surface by use of a mask, hence it would have been obvious to one of ordinary skill to employ such standard means for the claimed purpose. Note as a mask is generally made before each use, its pattern may be considered "predetermined". As both sets of claims

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are coating inner tube serpent this is with metal oxides to make electron emission films, while the patent does not specify specific tube dimensions, it would have been obvious to one of ordinary skill in the art to treat discharge device tubes of typical dimensions, which would have been expected to include dimensions as claimed.

5. Copending cases PN 6,893,677 B2 & SN 11/399,629 are of interest for related claimed material, but while there are method claims of coating tube interiors with metal oxides using thermal processes, they lack steps requiring either ozone or UV.

6. Note in the specification, on page 6, lines 11-13, teachings therein include Si & Ca as metals when listing examples of organic metal compounds and medals that may be used in them and the process. Therefore, for purposes of this application, oxides of calcium and semi-metals like Si will be considered to read on the metal oxide & organic metal compound limitations.

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (JP 59-13605) or Mizuta et al. (6,576,302 B1) or Chivukula et al. (6,337,032 B1) or Chandra et al. (5,935,638), in view of Celinska et al. (6,376,691 B1).

Nakagawa et al. (English abstract) teaches deposition of an organometallic compound(s) of the metals Cd, In, Sn or Sb on a glass substrate that is a REIT irradiated in the presence of O₂ to allow absorption thereof in the film and he did for oxidative decomposition to form a metal oxide film.

Alternately, Mizuta et al. (abstract; col. 1, lines 7-10; col. 2, lines 30-55; col. 3, lines 8-col. 4, line 67+; col. 9, lines 64-col. 10, lines 45 & 58-62; col. 11, lines 36-67+; col. 12, line 60-63 (mask); col. 13, lines 36-43 for mask & 50-62 for uses including transparent conductive oxides & plasma display panel; col.s 14-16 for specific examples) teach deposition of organic metal compound solutions, that are then dried, followed by use of UV lasers to cause heating for producing metal oxide coatings, where frequently a 2-step process is required where the first weak UV laser treatment further dries the deposit, while the second stronger UV laser treatment thermally decomposes to form the metal oxides.

Alternately, Chivukula et al. (abstract; col. 9, lines 5-59; col. 10, lines 17-40; col. 11, lines 37-55 & 61-col. 12, lines 40+; col. 13, lines 26-54; col. 14, lines 27-42 & 60-64; col. 15, lines 59-col. 16, lines 3 & 30-50; col. 19, lines 25-67) teach deposition of a sol-gel solution containing metal organic compounds which is first dried at a relatively low heat (100°C), then further heated to drive off volatile organic components (<450°C), then rapidly thermal annealed in oxidizing atmosphere, which advantageously may include ozone, which is taught to significantly speed up the oxidation process, thus reducing annealing times to achieve the low-temperature crystallization desired.

Alternately, Chandra et al. (abstract; col. 1, lines 5-28; col. 2, lines 40-61; col. 3, lines 8-30; col. 5, lines 50-57 & especially 66-col. 6, lines 35 (O₃ + heat) & 44-53; col. 7, lines 7-20) teach organosilicon solutions, optionally including organometallic modifiers, which are coded on a substrate, dried under low heat, then heated in in oxidizing atmosphere, where that atmosphere may include ozone, and where the coatings are taught to be useful for numerous electronic devices or up to electrical devices.

All of the primary references teach deposition processes that correspond to one or the other up applicant's alternative metal oxide deposition sequences, except none of them specify coating the interior of tubular substrates, however it is old and well-known in the metal oxide art to coat the interior of tubes, such as fluorescent lighting tubes with metal oxide compositions for various purposes inclusive of electronic emissive coatings and reflective coatings, etc., where is shown by Celinska et al. (abstract; col. 2, lines 18-67; col. 3, lines 1-col. for, 40 +) liquid organic metal (silicon) precursors of metal oxides and silicon oxides are coded on substrates such as the interior of fluorescent lamps, flat-panel displays and other electro-optical devices, where solid metal oxide films are formed in subsequent heating steps. It would have been obvious to one of ordinary skill in the art to employ any one of the deposition processes of the primary references to interiors of tubes, as the secondary reference of Celinska et al. demonstrates that it is desirable to form such coatings on such substrates, with the primary references providing various

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formation advantages, especially that the techniques require lower heating temperatures to achieve like or superior results than that formed by a purely thermal process.

8. Other art of interest for showing coating on the interiors of tubes includes the Japanese patent to Asahi glass Co, LTD, and US patents to Jongerius et al., Jerebic et al. or Miyagi et al.; with further oxidative processes of interest taught by Hosonuma et al., Koberstein et al. & the IBM technical bulletin.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

6/26/2006



MARIANNE PADGETT
PRIMARY EXAMINER